

## NEUSTAR CODE OF CONDUCT

1. Neustar will never, directly or indirectly, show any preference or provide any special consideration to any company that is a telecommunications service provider, which term as used herein shall have the meaning set forth in the Telecommunications Act of 1996.
2. No shareholder of Neustar shall have access to user data or proprietary information of the telecommunications service providers served by Neustar (other than access of employee-shareholders of Neustar that is incident to the performance of NANPA and LNPA duties).
3. Shareholders of Neustar will ensure that no user data or proprietary information from any telecommunications service provider is disclosed to Neustar (other than the sharing of data incident to the performance of NANPA and LNPA duties).
4. Confidential information about Neustar's business services and operations will not be shared with employees of any telecommunications service provider. Neustar shareholders will guard their knowledge and information about Neustar's operations as they would their own proprietary information.
5. No person employed by, or serving in the management of any shareholder of Neustar will be directly involved in the day-to-day operations of Neustar. No employees of any company that is a telecommunications service provider will be simultaneously employed (full-time or part-time) by Neustar.
6. Warburg Pincus will not control more than 40% of Neustar's Board.
7. No member of Neustar's board will simultaneously serve on the board of a telecommunications services provider.
8. No employee of Neustar will hold any interest, financial or otherwise, in any company that would violate the neutrality requirements of the FCC or the NPAC Contractor Services Agreements (the Master Agreements).
9. Neustar will hire an independent party to conduct a neutrality review of Neustar, ensuring that Neustar and its shareholders comply with all the provisions of this Code of Conduct. The neutrality analyst will be mutually agreed upon by Neustar, the FCC, NANC and the LLCs. The neutrality review will be conducted quarterly. Neustar will pay the expenses of conducting the review. Neustar will provide the analyst with reasonable access to information and records necessary to complete the review. The results of the review will be provided to the LLCs, to the North American Numbering Council and to the FCC and shall be deemed to be confidential and proprietary information of Neustar and its shareholders.

To ensure Neustar's compliance with the Neutrality Code of Conduct, the Code requires Neustar to undergo quarterly neutrality audits by a mutually agreed third party. Thus, Ernst & Young has conducted 50 quarterly reviews of Neustar's compliance with the Code of Conduct and other neutrality rules. Each of those 50 quarterly audits confirmed Neustar's continuing neutrality and these audit reports are shared with the Commission, the NANC, and the NAPM LLC. Moreover, beginning in 2003, the law firm of Piper Rudnick, now known as DLA Piper, conducts annual neutrality audits and submits its findings to the NAPM LLC. Each of these 10 annual audits has also confirmed Neustar's compliance with the Code of Conduct. No other prospective vendor has ever been subjected to such rigorous neutrality audits.

Below, Neustar will discuss the continuing importance of neutrality in the LNPA and then explain its neutrality compliance program in greater detail.

***Neutrality Remains Critical to the Success of Local Number Portability***

Neutrality in telecommunications numbering administration is not an idle academic exercise. The requirement in the Telecommunications Act of 1996 that the Commission "create or designate one or more impartial entities to administer telecommunications numbering" originated out of concern that telephone numbers were such an integral component of a telecommunications service that a biased administrator could impede the development of telecommunications competition. With this directive from Congress, and sharing the Congressional concern, the Commission, in FCC 96-286 at ¶192, determined that it was in the "public interest for the number portability databases to be administered by one or more neutral third parties." The Commission continued:

Neutral third party administration of the databases containing carrier routing information will facilitate entry into the communications marketplace by making numbering resources available to new service providers on an efficient basis. It will also facilitate the ability of local service providers to transfer new customers by ensuring open and efficient access for purposes of updating customer records. . . . Neutral third party administration of the carrier routing information also ensures the equal treatment of all carriers and avoids any appearance of impropriety or anti-competitive conduct. Such administration facilitates consumers' access to the public switched network by preventing any one carrier from interfering with interconnection to the database(s) or the processing of routing and customer information. Neutral third party administration would thus ensure consistency of the data and interoperability of number portability facilities, thereby minimizing any anti-competitive impacts.

When those words were written in 1996, competition in the local telecommunications market was still a vision. Fax machines and pagers were prominent. There were clear distinctions between Service Providers who were RBOCs, CLECs, IXC's, CMRS providers, and cable operators. There were only 60 million wireless subscribers in the United States and wireless Service Providers were initially exempt from the Telecommunication Act's LNP requirements. There were no smart phones. SMS and MMS were not in widespread use. The ITU-T had only just begun the development of standards for the transmission and signaling of voice communications over Internet Protocol (VoIP) networks with the H.323 standard.



Today, in part because of LNP, the telecommunications marketplace in the U.S. has grown into the largest and most competitively robust market in the world as traditional companies, cable operators, mobile providers, and new entrants square off to compete for business and residential subscribers. Wireless is exploding: there are now 330 million wireless subscribers in the U.S. and more SMS and MMS messages are sent each month than voice calls are made. New mobile devices are appearing in the market with increasing velocity; seemingly, everyone today has a smart phone, a tablet, or both. There are hundreds of thousands of applications available for these devices and millions are downloaded each day. VoIP is commercially available and in use by consumers and corporations throughout the country.

Innovation and change are the norm for the U.S. telecommunications market now and will be in the future. New handset devices are still being launched. More tablets and other devices are being developed. Convergence in voice, text, video, and Internet is increasing. Service providers are in the middle of developing and executing LTE plans and implementations. With this innovation and change, local number portability is more important today than ever. There are more than 600 million TNs contained across the seven regional NPAC/SMS systems. More than 500 million NPAC/SMS transactions occurred in 2012 alone. The NPAC/SMS enables number conservation using Thousands-Block Pooling and is readily used by Service Providers to gain customers, retain customers, migrate customers to different networks, and to restore service to customers in the event of outages or disasters. Neustar, as the U.S. LNPA, processed billions of individual Common Management Information Protocol (CMIP) operations in 2012 in support of those 500 million NPAC/SMS transactions.

With the continuing importance of local number portability, even a relatively small failure in the administration of LNP would have a significant financial impact on carriers and damage consumer confidence in a system that is a linchpin for telecommunications competition. As the Industry knows, the NPAC/SMS is an extremely complex system the performance of which is instrumental in ensuring the success of LNP in enabling the delivery of every voice call and text message, and the provision of critical services such as telephone number management and the restoration of service in the event of a disaster. The NPAC/SMS is a critical part of the telecommunications infrastructure in the United States. Confidence in the neutrality of the LNPA is critical, not only because the LNPA is privy to competitively sensitive information, but also because all participants in the Industry must be able to trust the LNPA to operate in a manner that will not favor any particular Service Provider or Industry segment, particularly as the LNPA and Industry adapt the NPAC/SMS to accommodate the Industry's transition to all-IP networks,

A Neutral Third Party administrator is essential to ensuring consumers and businesses are able to switch Service Providers without obstruction or undue delay in the process. Positive experiences with the porting process by consumers and businesses are vital to the success of communications competition. If consumers and businesses encounter unreasonable delays in their attempts to change Service Providers or if changing providers becomes an intolerable hassle, consumers and businesses will then become less likely to attempt switching providers. Thus, communications will be compromised if an LNPA, because of corporate affiliations or contractual relationships, acts in a non-neutral fashion. A non-neutral administrator may choose not to adequately support complex mass migration transactions or may selectively enforce transaction processing rules and Industry guidelines to give favored carriers or favored segments a competitive advantage. Similarly, since the LNPA and NPAC/SMS can play a major role in disaster recovery, a favored Service Provider could offer assurances to consumers and businesses that their services will be restored more rapidly than others after a natural disaster.

The LNP administrator must also be able to represent the porting interests of the Industry at standards development committees impartially. A biased administrator can use its power to block or push for standards for the benefit of one customer or Industry segment. Indeed, such an administrator could change feature functionality of the NPAC system to benefit certain providers or Industry segments, such as by supporting certain technologies over others. This is the very essence behind the requirements that a numbering administrator not be aligned with any particular Industry segment.

The Industry must be able to trust the integrity and neutrality of its LNPA for local number portability to function as intended. The porting process necessarily requires that Service Providers share confidential customer information and proprietary business plans with the LNPA. Service providers must have confidence that their competitively sensitive information will be tightly guarded and not shared with one or more of their competitors. If Service Providers lose this confidence because of real or perceived neutrality concerns with the LNPA, the entirety of the local number portability system will cease to function efficiently. If the portability system breaks down, then non-favored Service Providers may lose business because they can no longer capture new customers, leading not only to diminished communications competition but also to reduced consumer benefit that flows from vibrant competition. Moreover, the mere perception that the LNPA is favoring an Industry member or segment, or has the incentive to do so, will result in the Commission, the NAPM, and carriers devoting increased resources to monitoring the LNPA.

Given the increasing size of the U.S. communications market, the increasing level of competition, the increasing reliance on LNP for use beyond just competitive porting, and the volume of work the U.S. LNPA has to perform, the neutrality of the U.S. LNPA is more important than ever before and will be even more important in the future.

### **Neustar's Unmatched Commitment to Neutrality**

Commitment to neutrality in numbering administration permeates all aspects of Neustar's corporate existence. Neustar's Restated Articles of Incorporation, its corporate bylaws, and even its stock certificates all contain provisions reflecting the neutrality requirements imposed on Neustar by the Commission and the Industry. Neustar views every relationship that it undertakes, acquisition that it contemplates, investment that it examines, and debt that it incurs through the prism of neutrality. Contracts are declined; acquisitions and investments refused; and neutrality provisions negotiated into Neustar's debt instruments. No other company can make these claims, just as no other company can fully appreciate the full scope of what number administration neutrality entails.

HIGHLY CONFIDENTIAL



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Neustar periodically looks to make investments in new companies that are developing promising new technologies, in part to help Neustar develop interesting new products that it can deliver to the communications Industry. Each of these potential investments is investigated to ensure the target company is not a TSP or a TSP affiliate. Moreover, even if the company satisfies that check, Neustar requires that a neutrality escape clause be negotiated in its investment agreement, so that Neustar will be bought out immediately if the target company becomes a TSP or TSP affiliate in the future. Unfortunately, a number of the companies in which Neustar has sought to make such investments have not wanted to be encumbered by the neutrality driven provision and the investments could not be made.

The neutrality rules also affect entities that invest in Neustar. Pursuant to the Commission neutrality rules that apply to the NANPA and the PA, no TSP or TSP affiliate is permitted to own more than 5% of Neustar's equity. Rather than waiting for its investors to file documentation with the Securities and Exchange Commission (SEC) indicating that their ownership went above the 5% threshold, filings that can lag significantly in time, Neustar actively monitors its investors' ownership stakes using third-party services. As soon as Neustar discovers an investor has reached a 5% ownership stake, Neustar contacts the investor to ask for certification that it is not a TSP or a TSP affiliate, that is, that the investor itself is not on the Commission's list of TSPs (Form 499 list) nor does it own 10% or more of any entity that appears on that list. If they are not able or willing to provide such a certification, Neustar asks that the investor either reduce its investment in any TSP to below a level below 10% and provide the certification, or maintain its TSP investment but reduce its investment in Neustar to below 5%. Most investors that cross the 5% Neustar investment threshold have been able to provide Neustar with certification that they are neither TSPs nor TSP affiliates. In other instances, however, investors have chosen to draw down their TSP investments and, in others, reduce their stake in Neustar.

From a major transaction such as HIGHLY CONFIDENTIAL to the occasional investment opportunities that must be reviewed, to the standard day-to-day monitoring of our investors, Neustar's commitment to neutrality is clear and unmatched.

***Neustar is the only vendor in the industry with an effective and comprehensive neutrality compliance program in place today to ensure our Neutrality through the next contract term.***

Neustar has been able to undergo the extensive scrutiny of its neutrality auditors without significant issue because it has a comprehensive neutrality compliance program in place throughout the company. Overseeing Neustar's neutrality is the Neutrality Committee of Neustar's Board of Directors. This committee, composed of Neustar's CEO and two independent board members, establishes the company's neutrality compliance program and reviews the

reports of the neutrality auditors. The committee adopted the Neustar Neutrality Compliance Procedures, which provides a plan for compliance with the Neustar Code of Conduct, the Commission's neutrality orders and regulations governing the NANPA, PA and LNPA, and the current LNPA Master Agreements. Reporting to this committee and responsible for implementing the Neutrality Compliance Procedures and handling day-to-day neutrality issues is Neustar's Neutrality Officer, currently <sup>CONFIDENTIAL</sup>.

Neustar's neutrality compliance procedures begin with neutrality training for every one of Neustar's employees and directors, no matter where located or how removed from numbering administration. Employees and directors first undergo neutrality training as part of their onboarding process into the company and then go through a mandatory neutrality training program once a year thereafter. Additionally, prospective directors are vetted for neutrality before being permitted to join Neustar's Board of Directors. Employees and directors are required to certify their neutrality when they begin employment and their continuing neutrality every quarter thereafter.

Neustar feels that it is critical all employees and directors are given this training and required to provide the certifications because neutrality issues can arise in a number of ways, and given the global nature of communications, can come up anywhere in the world. All employees must understand Neustar's neutrality obligations so that we can avoid violations and so the employees can bring potential neutrality issues to the attention of the Neutrality Officer. For example:

A Neustar employee in Europe who may want to make an investment in a European company needs to understand that Neustar must be assured that the target company is not and will not become an affiliate of a U.S. TSP. Similarly, in 2011, a Neustar finance department employee recognized a potential neutrality issue when she received a notice of a Service Provider's annual meeting. Because of her neutrality training, she immediately brought the issue to the attention of the Neutrality Officer. It was determined that Neustar had inadvertently become the holder of a small number of shares of this SP, possibly as the result of a bankruptcy settlement in favor of a company acquired by Neustar. Because the Neustar employee recognized the neutrality issue, Neustar was able to notify the Commission and its auditors of the issue, and quickly disposed of the Service Provider's shares by donating them to the American Red Cross. Corporate-wide neutrality compliance training enables the prevention of neutrality issues before they occur and the rapid identification and resolution of such issues if one does occur.

The quarterly neutrality certifications by Neustar's employees and directors, along with a quarterly neutrality certification submitted by Neustar's CEO on behalf of the company, are an important part of the neutrality audits that Neustar undergoes. These audits, which cover all of Neustar, are performed annually in accordance with Neustar's current NPAC contract and quarterly as part of Neustar's NANPA and PA contracts. As noted above, the audits review Neustar's compliance with the Neutrality Code of Conduct, developed in collaboration with the Commission and the Industry, and with the Commission's rules and orders and the LNPA Master Agreements. In the course of the audits, Neustar makes available the necessary documents for the auditors including: neutrality compliance certifications from each employee, board member, and executive officer; a management assertion letter and management compliance certification; new hire certifications; and the results of the neutrality tests given annually to every Neustar employee. The auditors also review LEAP service agreements, NPAC end user agreements, NPAC access and security, and customer transactional documentation from the NPAC, NANPA, and PA to ensure Neustar has treated each user or applicant fairly and in an unbiased manner. The auditors review certifications from each





shareholder holding a 5 percent or greater share of Neustar's outstanding stock, notices to the FCC of any organizational and board changes, as well as our debt and revenue information. Our auditors then conduct extensive internal review of the audit proceedings, findings, and reports to ensure all appropriate audit procedures were followed.

The auditors' reports are reviewed by the Neutrality Committee of Neustar's Board of Directors. The full Board of Directors also reviews the results of the audits for independence, integrity, accuracy, and irregularities, and certifies its acceptance of the audit report by attesting and forwarding it to the FCC's Wireline Competition Bureau, Enforcement Bureau, the NANC, and the NAPM LLC.

As noted above, the results of this corporate-wide focus on neutrality speak for themselves. To date, Neustar has passed all 10 annual LNPA Neutrality Audits and all 50 quarterly NANPA/PA Neutrality Audits. In the highly competitive and volatile communications Industry, this is a significant achievement. Congress anticipated the neutrality challenges facing numbering administrators when it mandated that such administrators must be impartial. Neustar faces those challenges every day. Neustar's seasoned and highly expert team minimizes those challenges and, when they arise, effectively addresses all such neutrality challenges to the satisfaction of the FCC and the Industry. Neustar will continue to place the highest importance on our neutrality compliance during the new contract term so that the NAPM and the FCC can be confident that the Industry can trust its LNP administrator not to allow its business relationship or close ties with Industry members or an Industry segment to override its obligation or cloud its judgment.

***The Neutrality Legal Opinion provided by DLA Piper confirms Neustar's compliance with the Neutrality Criteria set forth by the NAPM LLC without requiring Neustar to make any structural or procedural changes. No complex neutrality cure that may require a time-consuming approval process is needed for Neustar to continue to serve as the U.S. LNPA.***

DLA Piper LLP has furnished a Legal Opinion confirming Neustar's compliance with the Neutrality Criteria set forth in the Section 3.4 of the VQS. By mutual agreement between Neustar and the NAPM LLC, DLA Piper has for the last 10 years evaluated Neustar's compliance with neutrality requirements and so is uniquely qualified to issue a Legal Opinion regarding Neustar's neutrality. Better than any other law firm could, DLA Piper understands what to evaluate, the questions to ask, and the issues to raise in connection with an entity's compliance with the unique requirements for LNP neutrality. It is also important to note that these periodic neutrality audits represent the only business relationship that DLA Piper has with Neustar. Thus, DLA Piper truly is a neutral third party auditor, as it can evaluate Neustar's neutrality without any fear of losing other business.

The DLA Piper Legal Opinion does not require Neustar to make any structural changes to its corporate structure or make any other changes in order to be a Neutral Third Party. Because Neustar meets or exceeds the Neutrality Criteria, and because Neustar is not proposing the use of any subcontractors to provide LNPA services for the next contract term, neither Neustar nor any Neustar subcontractor must develop and adhere to any complex neutrality cure. Thus, when considering Neustar for the next LNPA contract term, the NAPM and the Commission will not have to evaluate the efficacy of a neutrality cure, a time and resource intensive effort. When Lockheed Martin announced its intent to purchase a subsidiary of COMSAT 1998, for example, it took approximately eleven months for the Commission and the Industry to resolve the neutrality issues satisfactorily.



***If a Respondent is a unit or a wholly owned subsidiary of another entity, the Respondent is not neutral if the parent company is not neutral. Likewise, a parent cannot be neutral if one of its units or subsidiaries is not.***

Some Respondents, whose parent companies or subsidiaries are either non-neutral, or likely to be found non-neutral, may attempt to restructure themselves in creative ways. Regardless of the creative structure proposed, unless a Respondent is substantially divested from its non-neutral parent company or subsidiary and is out of the non-neutral parent company's control or no longer affiliated with the non-neutral subsidiary, the Respondent will be non-neutral as well. The only true neutrality cure, if the parent company or subsidiary is non-neutral, is the substantive divestiture of the business unit or wholly owned subsidiary that intends to be the LNP Administrator from the non-neutral entity, with additional protective measures like a voting trust and code of conduct. These are similar to the neutrality cures and safeguards that were applied to the assignment of the stringent NANPA and LNPA contracts to Neustar in 1999.

Additionally, a Respondent may attempt to weaken the protections and assurances provided to the Industry by a strong neutrality regime and undermine the robust competitive marketplace by proposing unique corporate structures that will allow a large public company to more easily cloak itself in the role of Neutral Third Party administrator. However, without full, corporate-wide neutrality compliance procedures, the initial neutrality protections will be difficult to sustain. Such a Respondent may argue that only a subsidiary or portion of the company need comply with neutrality provisions or that only some contractual relationships need to be subject to neutrality review. Such arguments reveal a lack of understanding of the seriousness and complexity of neutrality compliance.

A large corporation has as much an obligation to be neutral as any other potential Respondent. In fact, the tendency of large corporations to have operational areas that do not know what other operational areas are doing, demonstrates that a corporate-wide neutrality compliance program is a necessity. Each corporate group, line of business, and operational area must be monitored continuously for neutrality compliance; otherwise a serious neutrality problem may be identified only after significant resources (time, money, marketing efforts, public commitments, etc.) have been committed to the source of the neutrality concern. When discovered, it may be too late to rectify the problem. Such a situation may result in breach of contract and a complete breakdown of the nation's LNP system. To ensure the continued stability of the nation's LNP system, neutrality compliance must be required of all components of the LNPA and neutrality compliance must be monitored at all times.

***The Industry should use broad discretion to determine whether a Respondent is subject to undue influence by parties with a vested interest in the outcome of LNP administration activities.***

As explained by the Commission in FCC Order 99-346, neutrality requirements are designed to set a clear standard to measure the LNPA's impartiality, to ensure entities seeking to participate in the communications marketplace obtain timely and efficient access to numbering resources, that no particular Industry segment, consumer group, or technology is unduly favored or disadvantaged, and that the LNPA remains neutral in order to maintain the trust and confidence of the entities that must submit sensitive data to the LNPA in its administration activities. The first two Neutrality Criteria set out in the VQS serve as objective, quantifiable measures intended to prevent the LNPA from maintaining financial or equity relationships with telecommunications Service Providers and/or affiliates that could exert control over the decisions and activities of the LNPA or otherwise compromise its impartiality. The third Neutrality Criterion requires the Industry and the Commission to exclude, if left unresolved, a Respondent that is determined to be subject to undue influence by parties with a vested interest in the outcome of numbering administration and activities, regardless of whether a Respondent satisfies the first two Neutrality Criteria. In other words, depending on the type and size of business that a Respondent has with a single TSP or a group of separate, similarly aligned TSPs (i.e., same Industry segment), the Respondent could be subject to undue influence even if the



Respondent is not a TSP or TSP affiliate and does not obtain a majority of its revenue from a TSP or issue a majority of its debt to a TSP.

For example, if a Respondent, or an affiliate of a Respondent, is providing telecommunications network operations outsourcing services to a TSP through a multi-year contract for which it receives billions of dollars and under which it accepts the transfer of thousands of TSP employees, then it would be hard to argue that such a Respondent, or an affiliate of the Respondent, is not subject to undue influence even if the first two neutrality criteria are satisfied—particularly if the Respondent or its affiliate is performing the day-to-day operations of the TSP. Likewise, if a Respondent, or an affiliate of a Respondent, derives a substantial amount of its revenue from a particular Industry segment, it would once again be hard to argue that such a Respondent is not subject to undue influence from that segment even if the first two criteria are met.

Fortunately for the Industry, the NAPM LLC, and the Commission, as attested to by the DLA Piper Neutrality Legal Opinion, neither Neustar, nor any of its affiliates, manages the network operations of any TSP. Neustar also does not derive a majority of its revenue from any particular Industry segment.

***Neutrality requirements must apply equally to prime vendors and subcontractors.***

The 2015 LNPA Vendor Qualification Survey makes clear that the Neutrality Criteria apply to subcontractors involved in providing U.S. LNPA services. This is consistent with the Commission's rule governing the use of subcontractors for NANPA and Thousands Block Pooling Administration (47 CFR 52.12(a)(2)) and with the Commission's recent LNPA procurement. The Industry must be diligent when reviewing Respondent proposals that rely on the use of subcontractors or other third parties to provide the LNPA services. Subcontractors involved in the day-to-day delivery of LNPA services must be held to the same Neutrality Criteria as the prime contractor, including the possibility of having to develop and adhere to a neutrality cure and provide relevant neutrality audits and reports. Otherwise, a non-neutral entity could use the subcontractor loophole to circumvent the NAPM and FCC's neutrality requirements. There are many areas within the provision of LNPA services where a subcontractor that is subject to undue influence is just as able as a non-neutral prime vendor to skew performance in a manner that advantages particular entities, with the same negative impact on the Industry and telecommunications competition.

Neustar does not propose to use any subcontractors in the provision of the services required by the RFP, so there are no subcontractors associated with Neustar's bid whose neutrality must be examined by the Industry or the Commission.

**Conclusion**

The NPAC/SMS is ingrained into the U.S. telecommunications market and infrastructure more than ever before, to the point that LNP is taken for granted and expected by consumers and business seeking to change Service Providers. The NPAC/SMS is relied upon to implement the very important number conservation measure of Thousand-Block Pooling and is used by Service Providers to optimize their networks and restore service to customers in case of extended network outages. NPAC/SMS information impacts all services attached to a telephone number, including voice services and SMS and MMS messaging. LNP administration is a vital underlying service that is essential for these services to work effectively and efficiently. The unquestioned neutrality of the LNPA vendor continues to be of the utmost in importance, now more than ever.

## Neustar Response to LNPA 2015 Surveys



Neustar embodies what it means to be neutral. We have been neutral since our inception over a decade ago. For Neustar, neutrality is not a simply a platitude; it is the essence of Neustar as a corporation. At Neustar, our neutrality is not sheltered, fenced-off, or confined to certain groups and organizations, but is deeply ingrained throughout the entire company. Our neutrality has been inspected, audited, and verified. By retaining Neustar as the U.S. LNPA, the Industry, the NAPM LLC, the NANC, and the Commission can be assured that the neutrality of LNPA services will be maintained into and through the next contract term.



## 2.4 Neustar's LNP Expertise



### Why Neustar

- Meets or exceeds all LNP Neutrality Criteria
- USA's only LNP Administrator under contracts first executed in 1997
- Canada's only LNP Administrator under contracts first executed in 1998
- Processed and managed over 500 million transactions in the US NPAC/SMS in 2012 alone
- Propose providing all U.S. LNPA services without the use of subcontractors or third parties

The Industry in its 2015 LNPA Vendor Qualification has asked respondents to identify: 1) any U.S. LNPA service experience or U.S. LNP experience; 2) any other LNPA-like or LNP experience (presumably from other countries); and 3) any other LNP-related product experience so the Industry can assess and evaluate whether a given respondent possesses sufficient experience and technical and operational capabilities to deliver the U.S. LNPA.

Under contracts first executed in 1997, Neustar has been the only U.S. LNP Administrator since LNP was introduced. We provided the service initially as part of Lockheed Martin and then on our own as of late 1999. As the U.S. LNPA, Neustar has accomplished the following:

- Enhanced the NPAC/SMS platform including the successful management of 452 NANC change orders, over 100 Illinois change orders, and eleven major software releases
- Successfully implemented Thousands Block Pooling starting in 1998
- Successfully implemented Wireless Number Portability starting in 2003
- Successfully implemented One-Day Porting in 2011
- Processed over 12 billion CMIP Operations in 2012 alone
- Processed over 40,000 Pooled Block Requests with over 99.9% accuracy in 2012 alone
- Processed over 55,000 Mass Change Requests for over 175 companies in 2012 alone
- Refreshed the entire NPAC/SMS hardware and network multiple times

Neustar Response to LNPA 2015 Surveys



- Earned "Superior" (highest possible) rating for U.S. LNPA Customer Survey Score since 2009
- Earned highest ever Overall Satisfaction rating (3.84 out of 4.00) in the 2012 U.S. LNPA Customer Survey
- Satisfied 27 U.S. LNPA SLRs 99.94% of the time during the last five years

There is a vast difference between "being qualified to bid" versus actually being "qualified to serve." As detailed below, U.S. LNP is unique with no directly comparable LNP system worldwide except, arguably, Canada, where there are many similarities in NPAC/SMS business rules and processing. Neustar is the sole LNPA in Canada as well. If the U.S. LNPA selected for the next contract term cannot transition and operate the service competently, there will be several negative impacts, such as:

- Misrouted telephone calls and misrouted traffic for services such as SMS/MMS messages, causing increased Service Provider customer service calls and associated costs; and if long-term, customer retention problems
- Failed or slowed competitive consumer porting with reduced or slowed revenue to Service Providers and increased Service Provider customer care and resolution costs
- Failed or slowed customer retention programs and new service/mobile device launches, again, with reduced or slowed revenue to Service Providers and further increased Service Provider customer care costs
- Failed or slowed access to telephone numbers for Service Providers
- Delayed law enforcement and public safety activity, putting citizens and property at risk
- Impaired disaster recovery efforts that use porting, pooling, or network migration as a remedy
- Failed or slowed Service Provider network migrations, potentially leading to customer service outages
- Improper calls made by automated dialers to wireless telephone numbers, causing complaints to the FCC and State PUCs

Aside from having the requisite U.S. LNPA experience, Neustar also has unmatched staff expertise whereby we have hired many individuals with service provider and regulatory experience to serve in leadership positions to provide value to the Industry and the FCC. The Industry will recognize many of these people as U.S. LNP pioneers.

This approach also translates into providing superior customer service in the critical role as the nation's only LNP administrator. Over the years, Neustar has continuously improved its LNP administration service to achieve a near flawless rating in 2012. Given that a new vendor will have to focus on getting only the basic service off the ground, it is highly unlikely that any other respondent can match the level of service that the Industry has come to expect of Neustar.



***The U.S. LNPA's aggregate characteristics are not duplicated in respondents whose products or services they claim are comparable.***

Respondents will attempt to say that their International LNP experience (either from an individual country or through a combination of countries) is comparable to the United States. However, despite other international implementations of LNP since 1997, the U.S. LNP ecosystem and U.S. LNPA service continue to be unique due to:

- Large telecommunications market
- High value (life-time and monthly ARPU) of an individual telephone customer
- Number of participants connected to the centralized LNP database (NPAC) and receiving data
- Number of facilities-based service providers
- The complexity of NPAC data models
- Huge volume of transactions
- Governance structure between Industry and regulatory stakeholders
- Complexity of portability business rules and short porting timeframes
- NPAC/SMS CMIP interface requirements
- Cost-recovery requirements
- Large number of Service Providers billed
- Strict neutrality requirements

International LNP deployments span the gamut of: 1) using a centralized file cabinet approach with daily batch uploads and downloads of ported telephone numbers to 2) using a distributed LNP methodology whereby no centralized LNP database exists and carriers send messages to each other when a telephone number ports to 3) being more sophisticated through the use a centralized database system that does possess some real-time broadcast capability. International LNP deployments are generally less demanding than the U.S. For example, many International LNP deployments do not broadcast routing updates in real-time; do not allow telephone numbers to be ported between wireline and wireless providers; only identify the service provider ported to and from, and not the underlying network; and involve porting intervals of days or weeks instead of minutes and hours as in the U.S.

From an operational perspective, the various aspects of international number portability offerings typically are handled with a partnership of companies or through the use of sub-contractors. A typical International LNP deployment uses a local, in-country vendor to operate the LNP service but uses an out-of-country vendor to develop the LNP system. This approach means that much of a vendor's LNP experience in those markets is incomplete as the vendor does not perform all aspects of the administration. These types of arrangements work with varying degrees of success throughout the world, though all under far less complex and demanding circumstances than required in the U.S. The inherent problem associated with harmonizing focus and priorities, guaranteeing stability,

and applying strict neutrality rules across multiple entities, makes this approach risky and often problem-ridden. This approach becomes far riskier as the size and complexity of the system increase.

The following Exhibit 2.4-1 shows the major system functions and contract characteristics of two LNP deployments—the U.S. and India—and the substantial differences between the LNP deployments.

It is important to note that the Canadian NPAC shares a great deal of commonality with the U.S. NPAC, although the systems differ in that Canada has not implemented number pooling and annual transaction levels are significantly lower—just 4M for Canada versus over 500M for the U.S. The platforms and business rules are similar arguably making the Canadian NPAC the only comparable LNP implementation in the world. Neustar is the sole administrator of the Canadian NPAC.

LNP experience from a country like Ghana or from a collection of countries like Mexico, Chile, and Pakistan is not comparable to experience necessary to serve as the U.S. LNPA. To demonstrate just one of many differences between international LNP deployments, Exhibit 2.4-2 shows the timeframe to port a mobile numbers between various countries that have LNP. Please note that the timeframe in the U.S. is extremely low—less than 2 hours—whereby the timeframe in the rest of the world is much longer. Even if experience from international LNP deployments were comparable, respondents would likely not be using the same staff and management team for the U.S. LNPA.

Development of SOAs and/or LSMSs, or an operation of an ICP service bureau is not sufficient experience to deliver the Service required by the RFP. Although these services are complementary to that of the U.S. LNPA, the experience from such is not directly comparable. There are several differences: 1) the development of these LNP-related systems and operation of LNP-related service bureaus are not subject to strict FCC-mandated neutrality requirements; 2) providers of such systems are beholden to the one or two corporate entities that provide a bulk of their revenues as opposed to being service neutral to an entire Industry 3) these systems do not have to process high porting transaction volumes; and 4) these LNP-related systems and service bureaus are not subject the GEP, SLRs, and audits required of the U.S. LNPA service.

### **Neustar non-U.S. LNPA/LNP Experience**



Neustar also successfully serves as the sole LNP Administrator in Canada under contracts first executed in 1998. As shown above, the Canadian NPAC is arguably the only LNP system worldwide that is remotely comparable to the U.S. LNPA.

Neustar is also responsible for NPAC implementations in both Brazil and Taiwan; however, not as the LNP Administrator. In Brazil, as a subcontractor to the NPAC Administrator (ClearTech), we designed and built the NPAC system. We continue to provide software enhancements and Tier 3 support for that NPAC system. Similarly, our contract in Taiwan called for us to build the NPAC system and operate it for the first year, while training a government entity to take over operations after the first year. Neustar now provides system maintenance and Tier 3 support for the Taiwan NPAC system.

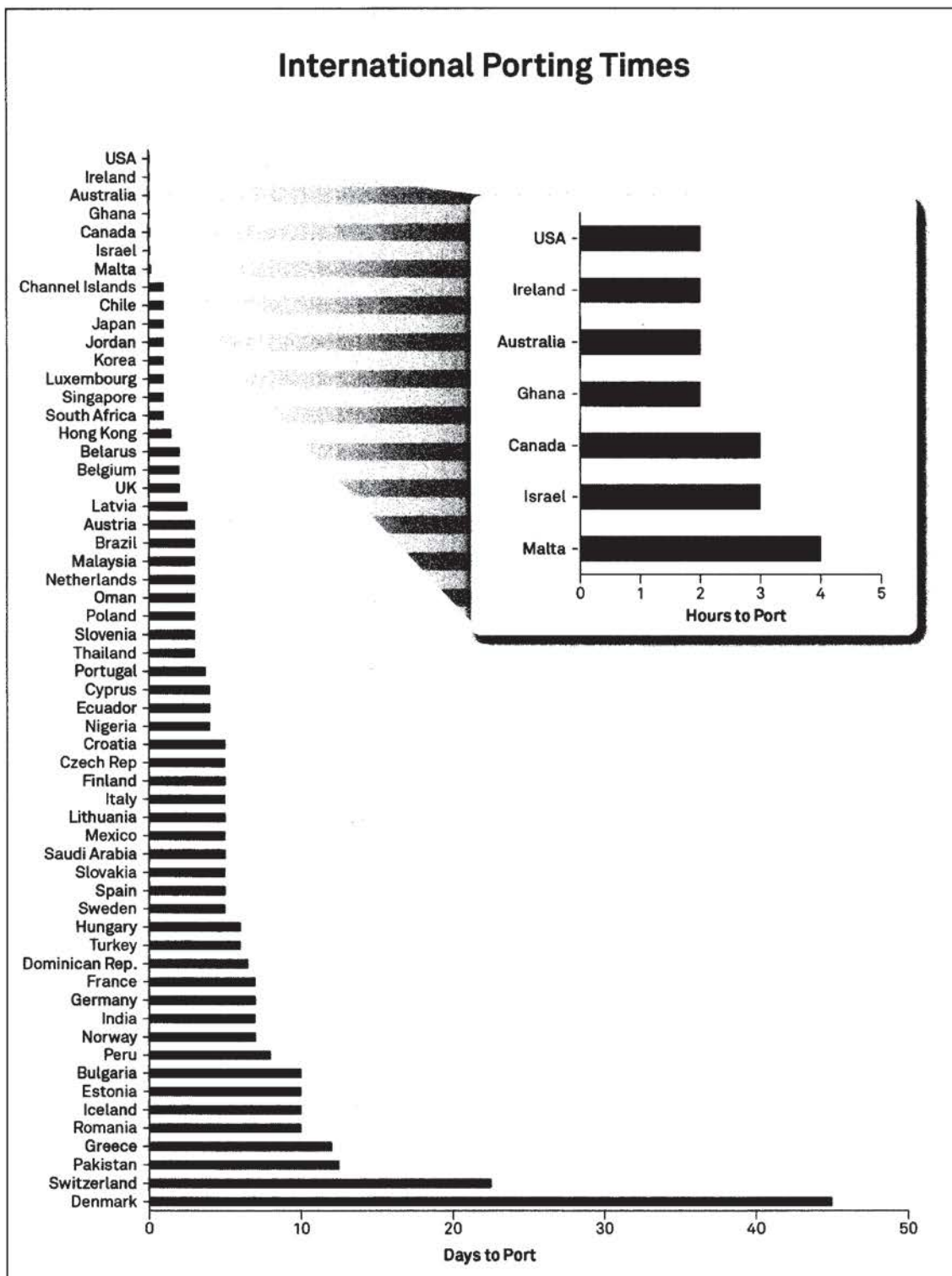
As with all foreign LNP implementations other than Canada's, these implementations do not resemble the U.S. LNP implementation at all, either in administration services, business rules, functionality, system performance requirements, or transaction volumes, and should not be considered as comparable experience.



## Comparison of LNP Deployments –U.S. Versus India

U.S. 	Contract or System Attribute	 India
<b>NPAC/LNP Administrator Governance</b>		
<b>Yes</b>	Single National LNP Administrator	<b>No</b>
<b>Yes</b>	Regulated Neutrality Requirements	<b>Yes</b>
<b>Portability/Number Pooling Implemented</b>		
<b>Yes</b>	Fixed TN Portability Implemented	<b>No</b>
<b>Yes</b>	Mobile TN Portability Implemented	<b>Yes</b>
<b>Yes</b>	Intra-carrier TN Porting Implemented	<b>No</b>
<b>Yes</b>	Mass TN Porting Tool Implemented	<b>No</b>
<b>Yes</b>	Porting Across Technologies (Fixed, Mobile, VOIP) Implemented	<b>No</b>
<b>Yes</b>	Number Pooling Implemented	<b>No</b>
<b>Porting Rules and Volumes</b>		
<b>425+ Million</b>	Annual Fixed TN Porting Volumes	<b>0</b>
<b>80+ Million</b>	Annual Mobile TN Porting Volumes	<b>40 Million</b>
<b>1,000+</b>	Number of Carriers Connected/Supported	<b>15+</b>
<b>Minutes</b>	Wireless Porting Intervals	<b>7 Days</b>
<b>ACQ/LRN</b>	Call Routing Method	<b>ACQ</b>
<b>Yes</b>	Recipient Carrier-Controlled Porting	<b>Yes</b>
<b>NPAC Features and Functionality</b>		
<b>Yes</b>	Detailed NPAC/LNPA Service Levels	<b>No</b>
<b>Yes</b>	Severe NPAC/LNPA Performance Penalties	<b>No</b>
<b>Yes</b>	NPAC Database Supports Enhanced Features	<b>No</b>
<b>Yes</b>	NPAC Database Identifies Reseller Relationships	<b>No</b>
<b>Yes</b>	Separate Law Enforcement Platform Implemented	<b>No</b>
<b>Yes</b>	Mechanized NPAC Data Access	<b>Yes</b>
<b>Yes</b>	Real-Time NPAC Data Distribution	<b>No</b>
<b>Yes</b>	Service Provider NPAC UI Access	<b>Yes</b>

**Exhibit 2.4-1:** Differences in the deployment of LNP between the U.S. and India span functionality, porting rules, and volumes. In many critical areas there is no comparison—the U.S. deployment is far more complex.



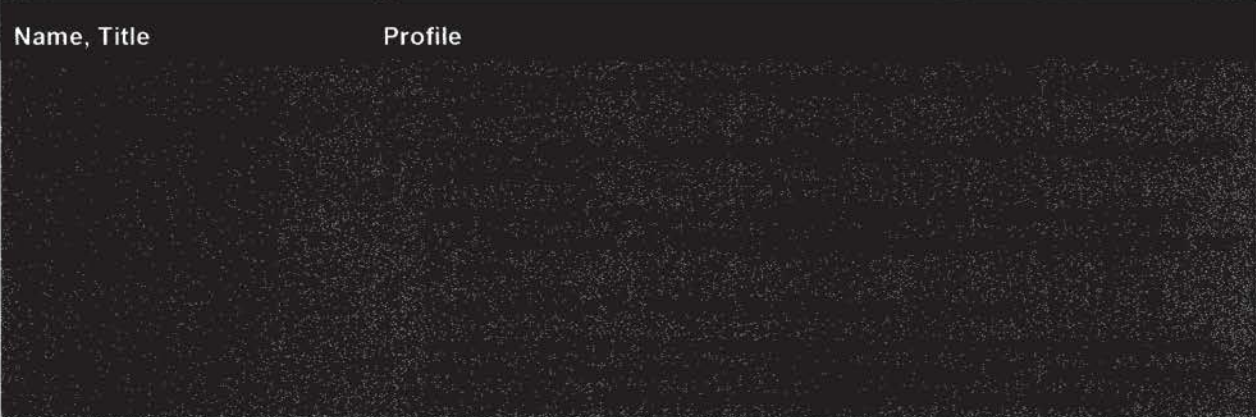

**Exhibit 2.4-2:** The time to port timeframe in the U.S. is extremely low—less than 2 hours—whereby the timeframe in the rest of the world is much longer.



### Neustar Executive Team

Neustar's management team (shown in Table 2.4-1) provides corporate oversight of NPAC services as well as sets the strategic direction of the company.

**Table 2.4-1. Neustar's Management Team**

Name, Title	Profile
	
Paul Lalljie Senior Vice President and Chief Financial Officer	<ul style="list-style-type: none"> <li>Oversees Neustar's worldwide finance organization, which includes treasury, accounting, financial planning and analysis, real estate management and investor relations</li> <li>Prior to becoming CFO, served in a variety of increasingly expansive roles within Neustar's Corporate Finance department, including Vice President, Financial Planning &amp; Treasurer and other positions within accounting, financial planning and analysis, treasury and investor relations</li> <li>Northern Virginia Technology Council's (NVTC) Public Company CFO of the Year 2012</li> </ul>
	
Steve Edwards Senior Vice President, Carrier Services	<ul style="list-style-type: none"> <li>Oversees North America carrier sales, product management, marketing and channel partnerships for Neustar's global Numbering Services</li> <li>Prior to joining Neustar, was chief operating officer at Regenesys Power LLC</li> <li>Previously served as chief marketing officer for Sonus Networks Inc.; vice president of indirect sales and channel development at AT&amp;T Business Services; and president of BT Visual Images</li> </ul>

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## **Neustar's U.S. LNPA Experts**

Neustar not only believes that highly relevant and directly comparable corporate experience is necessary to be successful, but that specific personnel and staff proposed for the U.S. LNPA also must be diverse, highly capable, and experienced. In this regard, Neustar's U.S. LNPA experience is unmatched. Table 2.4-2 provides concise biographies of many of Neustar's U.S. LNPA experts from the various disciplines—product management, industry relations, regulatory, customer support, software development, billing and collections, IT operations, and industry change management—that comprise the U.S. LNPA service.

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Bill Reidway,

VP, Product Management,  
Numbering Services

Over 6 years Direct LNP  
experience, 11 years telecom  
experience

- Responsible for NPAC roadmap and user experience
- Responsible for administration and customer relationships for NPAC Administrator Products (Law Enforcement Enhanced Analytical Platform & Wireless Do-Not-Call)
- Responsible for product management for ancillary Numbering Inventory and Information Services (Port PS, Resource Inventory Management System)

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While not fully dedicated to the NPAC, Neustar leverages the following experts as necessary (see Table 2.4-3). These employees are either recognized thought leaders in their respective fields or have been Numbering experts, either with the Industry or with Neustar.

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